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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,365	08/31/2001	Jun Osanai	S004-4393	1289

7590 03/03/2003

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New York, NY 10004

EXAMINER

TRAN, THIEN F

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 03/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/944,365	OSANAI ET AL.	
	Examiner Thien F Tran	Art Unit 2811	
<i>-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --</i>			
<b>Period for Reply</b>			
<b>A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.</b>			
<ul style="list-style-type: none"> <li>- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.</li> <li>- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.</li> <li>- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.</li> <li>- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).</li> <li>- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).</li> </ul>			
<b>Status</b>			
1) <input type="checkbox"/> Responsive to communication(s) filed on _____.			
2a) <input type="checkbox"/> This action is FINAL.                    2b) <input checked="" type="checkbox"/> This action is non-final.			
3) <input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.			
<b>Disposition of Claims</b>			
4) <input checked="" type="checkbox"/> Claim(s) <u>1-73</u> is/are pending in the application.			
4a) Of the above claim(s) <u>3,5-10,12-14,17-42,44-53 and 55-73</u> is/are withdrawn from consideration.			
5) <input type="checkbox"/> Claim(s) _____ is/are allowed.			
6) <input checked="" type="checkbox"/> Claim(s) <u>1,2,4,11,15,16,43 and 54</u> is/are rejected.			
7) <input type="checkbox"/> Claim(s) _____ is/are objected to.			
8) <input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.			
<b>Application Papers</b>			
9) <input type="checkbox"/> The specification is objected to by the Examiner.			
10) <input type="checkbox"/> The drawing(s) filed on _____ is/are: a) <input type="checkbox"/> accepted or b) <input type="checkbox"/> objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).			
11) <input type="checkbox"/> The proposed drawing correction filed on _____ is: a) <input type="checkbox"/> approved b) <input type="checkbox"/> disapproved by the Examiner. If approved, corrected drawings are required in reply to this Office action.			
12) <input type="checkbox"/> The oath or declaration is objected to by the Examiner.			
<b>Priority under 35 U.S.C. §§ 119 and 120</b>			
13) <input checked="" type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).			
a) <input type="checkbox"/> All    b) <input type="checkbox"/> Some * c) <input checked="" type="checkbox"/> None of: 1. <input checked="" type="checkbox"/> Certified copies of the priority documents have been received. 2. <input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____. 3. <input type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received.			
14) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).			
a) <input type="checkbox"/> The translation of the foreign language provisional application has been received.			
15) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.			
<b>Attachment(s)</b>			
1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)		4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____	
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)		5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)	
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____		6) <input type="checkbox"/> Other: _____	

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of species 1 (Fig. 1) wherein claims 1, 2, 4, 7, 9, 11, 15, 16, 43-46 and 54 are readable on the elected species in Paper No. 8 is acknowledged. The traversal is on the ground(s) that the non-elected claims have been retained pending possible withdrawal of the restriction requirement or allowance of a generic or sub-generic claim. This is not found persuasive because it is well settled that species are required to be restricted if it is shown that these species are distinct. It is clearly established that species are in fact distinct in Paper No. 7.

The requirement is still deemed proper and is therefore made FINAL.

Claims 7, 9, 44, 45 and 46 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 8.

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 09/01/2000. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 09/29/2000. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).Acknowledgment is made of applicant's claim for foreign priority based on

Art Unit: 2811

an application filed in Japan on 10/30/2000. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 02/13/2001. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 02/20/2001. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 04/11/2001. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 04/17/2001. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 06/21/2001. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 07/05/2001. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on applications filed in Japan on 08/08/2001. It is noted, however, that applicant has not filed certified copies of the foreign applications as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 08/09/2001. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 08/10/2001. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 43 and 54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the first polycrystalline silicon" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 43 recites the limitation "the semiconductor substrate" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

Claim 54 recites the limitation "the first polycrystalline silicon" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 11, 15, 16, 43 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdeljac et al. (USPN 5,554,873) in view of Yoh et al. (USPN 4,559,694).

Erdeljac et al. discloses a complementary MOS semiconductor device (Fig. 11) having an N-channel MOS transistor 44, a P-channel MOS transistor 50 and a resistor. Erdeljac et al. does not disclose a conductivity type of a gate electrode 24 of the N-channel MOS transistor is P-type, and a conductivity type of a gate electrode 24 of the P-channel MOS transistor is P-type. Yoh et al. discloses a complementary MOS semiconductor device (Figs. 59, 60) having an N-channel MOS transistor Q4, a P-channel MOS transistor Q1, wherein a conductivity type of a gate electrode of the N-channel MOS transistor is P-type, and a conductivity type of a gate electrode of the P-channel MOS transistor is P-type. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to form the gate electrodes 24 of the P-channel MOS transistor 50 and the N-channel MOS transistor 44 of P-type instead of N-type in order to obtain transistors having low threshold voltages that can operate at low voltage and consume low power.

Regarding claim 2, Erdeljac et al. also discloses the gate electrodes 24 each comprises a single layer of first polysilicon having a film thickness of about 5000

Art Unit: 2811

angstroms. Yoh et al. discloses boron served as a P-type impurity and P-type gate electrode having an impurity concentration of  $1 \times 10^{19}$  atoms/cm<sup>3</sup> or more. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to dope boron in the P-type gate electrodes 24 of MOS transistors 44 and 50 with an impurity concentration of  $1 \times 10^{19}$  atoms/cm<sup>3</sup> or more as taught by Yoh et al. in order to increase the gate electrode conductivity.

Regarding claim 4, the resistor 32 is polysilicon and has the same film thickness as a first polysilicon constituting the gate electrode 24.

Regarding claim 11, the N-channel MOS transistor 44 and the P-channel MOS transistor 50 include a MOS transistor having a first structure of a single drain structure comprising a diffusion layer with a high impurity concentration in which a source (42, 48) and a drain (42, 48) overlap the P-type gate electrode in a planar manner.

Regarding claim 15, in the N-channel MOS transistor 44, it is inherent that a channel in which a threshold voltage is in enhancement is a buried channel.

Regarding claim 16, in the P-channel MOS transistor 50, it is inherent that a channel in which a threshold voltage is in enhancement is a surface channel.

Regarding claim 43, the modify Erdeljac et al. discloses a P-type semiconductor substrate 10, and regions of the N-channel MOS transistor and the P-channel MOS transistor are defined by forming an N-type well 18 respectively.

The claim limitations "formed in the same layer" in claim 4 and "formed by a chemical vapor deposition method" in claim 54 are taken to be product by process limitations which do not carry weight in claims drawn to structure. A product by process

claim directed to the product *per se*, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien F Tran whose telephone number is (703) 308-4108. The examiner can normally be reached on 8:30AM - 5:00PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Art Unit: 2811

tt  
February 24, 2003

*Thien Tran*

Thien Tran  
Patent Examiner  
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